

MAMMALS FROM NEPAL¹

DAVID H. JOHNSON, S. DILLON RIPLEY, AND KITTI THONGLONGYA²

(With a text-figure)

In 1948-1949, S. Dillon Ripley led a field party to Nepal to collect natural history specimens for Yale University and the Smithsonian Institution. One hundred twelve specimens of mammals were obtained. Subsequent study showed that thirty-five species were represented. New records from Nepal include *Tupaia glis*, *Vulpes bengalensis* and *Lepus grahani*. The latter identification, based on an immature specimen, is included with reservation.

INTRODUCTION

S. DILLON RIPLEY

In 1947 I made my first visit to Nepal at the conclusion of a six-month bird collecting reconnaissance in the subcontinent of India. Prior to that time, my Indian colleague, Dr. Sálím Ali, and I made an informal pact that we would work together to prepare an up-to-date listing as well as a handbook on the bird fauna of this huge region, a project on which we would be occupied for the next twenty-seven years. In fact, we are still (in 1979) engaged in revising my SYNOPSIS of the birds of the region, published in 1961, and now being reprinted. The first two volumes of our joint ten-volume HANDBOOK (1968-1974) are being re-edited and published anew.

In 1948-1949, I revisited Nepal, encouraged by the then Government and financed with a major grant-in-aid from the National Geogra-

phic Society, as well as support from Yale University (my then employer), and the Smithsonian Institution, whose Secretary, Dr. Alexander Wetmore, distinguished naturalist of his time, was always keen to stimulate natural history research. On this lengthy trip, I was joined by two graduates of the year, roommates at Yale, whom I had come to know as a Resident Fellow in theirs and my college, Jonathan Edwards. The two young men, Richard Mack and Howard Weaver, knocked on my door one evening and said that they had heard I was off again to Nepal and could they come? I responded by saying that I needed some help in small mammal collecting and if they would learn from our Peabody Museum assistants, perhaps they could qualify.

The collection which they subsequently made, assisted in part by Edward C. Migdalski, my principal assistant, who had helped me on my trek in the previous season, is finally reported on herewith. The research was begun in the late 1950's by David H. Johnson, formerly of the National Museum of Natural History's staff, and continued in the 1960's by the late Kitti Thonglongya, a research fellow on a visit from Thailand. The publication fulfills a pledge which I made to the then Secre-

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² David H. Johnson (retired), and S. Dillon Ripley, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C., 20560; Kitti Thonglongya (deceased).

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tary of the National Geographic Society, Melvin M. Payne, that publications in natural history would indeed follow from this expedition! I have dedicated much subsequent correspondence over the years to this end, but still have to report failure in having the collection of fishes published as reported in my Research Report to the National Geographic Society (1975).

The collection of thirty-five species and one hundred twelve specimens, while not startling in its addition to new knowledge of Nepalese mammals, seems worthy of putting on record to inform future workers of the material that is available for study in the National Museum of Natural History.

I am most grateful to my colleagues, Messrs Mack and Weaver, for their participation, as well as to the societies and institutions which afforded us the opportunity for our field work. It has been a recent great

pleasure to me and to the Smithsonian Institution to pick up the threads of collaboration again with the Government of Nepal in connection with the first scientifically-documented study of the life-history of the tiger, *Panthera tigris*, now being undertaken at the Royal Chitwan National Park in Nepal by a Nepalese-American team with support from the Smithsonian Institution and the World Wildlife Fund. Much of what I wrote earlier (1950 *et seq.*) about the deforestation and decline of animal life along the broad sweep of the Himalayas has come to pass. It is rewarding to note, however, that the Royal Government of Nepal has seen fit to take positive steps to protect certain areas as national parks, and to institute research on life-history studies of the larger mammals such as rhinoceros, tiger, and some species of deer. All of these studies promise well for the future economy and preservation of this unique part of the world.

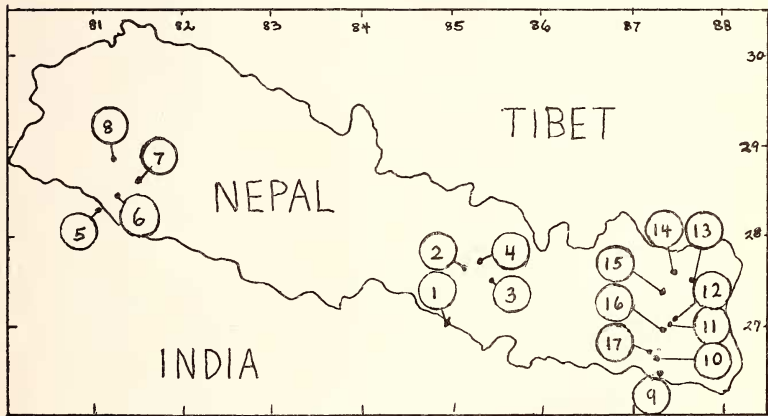


Fig. 1. Collecting localities.

COLLECTING LOCALITIES

The itinerary of the expedition has been outlined by Ripley (1950: 355-359), who also gives brief descriptions of some of the collecting localities. The places at which mammals were collected are listed below in the order that the first specimens were taken. The latitude and longitude are from Army Map Service 1:250,000 maps of India and Pakistan, Series U-502, published in parts from 1958 to 1963. The inclusive dates on which specimens of mammals were collected and a list of the kinds found at each place are also included. The serial numbers correspond to those on the accompanying map (Fig. 1).

1. Raxaul-Birganj, adjacent border towns in Bihar and Nepal, respectively, 350 feet. 27° 0' N., 84° 57' E. November 16-18 and December 7. *Suncus caeruleus*, *Scotophilus heathii heathii*, *Canis aureus indicus*.
2. Chandragiri Pass, central Nepal, 7000-7500 feet. 27° 41' N., 85° 10' E. November 22 and December 6, *Dremomys lokriah lokriah*.
3. Godaveri, central Nepal, 6000-7000 feet. 27° 34' N., 85° 24' E. November 27-28. *Dremomys lokriah lokriah*, *Rattus nitidus nitidus*, *Mus nagarum*.
4. Katmandu, central Nepal, 4271-4500 feet. 27° 42' N., 85° 20' E. December 2-5. *Bandicota bengalensis bengalensis*, *Vulpes bengalensis*.
5. Kauriala Ghat, United Provinces, 400 feet. 28° 22' N., 81° 02' E. December 11-12. *Lepus ruficaudatus ruficaudatus*, *Tatera indica indica*.
6. Tikapur, western Nepal, 500 feet. 28° 30' N., 81° 10' E. December 13 and January 6-9. *Suncus murinus tyleri*, *Tatera indica indica*, *Rattus rattus gangutrianus*, *Mus*

hooduga hooduga, *Mus dunnii*, *Mus cervicolor cervicolor*, *Herpestes edwardsii nyula*.

7. Chisapani, western Nepal, 950 feet. 28° 38' N., 81° 17' E. December 16-21. *Suncus murinus tyleri*, *Cynopterus sphinx gangeticus*, *Presbytis entellus schistaceus*, *Rattus rattus gangutrianus*, *Mus hooduga hooduga*, *Mus saxicola gurkha*, *Canis aureus indicus*, *Lutra perspicillata perspicillata*.
8. Rekcha, western Nepal, 5000 feet. 28° 53' N., 81° 10' E. December 27-31. *Suncus murinus tyleri*, *Rattus rattus gangutrianus*, *Rattus turkestanicus vicerex*, *Mus cervicolor cervicolor*.
9. Biratnagar, eastern Nepal, 250 feet. 26° 28' N., 87° 17' E. January 18. *Mus hooduga hooduga*.
10. Dharan Bazar, eastern Nepal, 1000 feet. 26° 49' N., 87° 17' E. January 22. *Callosciurus pygerythrus lokroides*, *Sus scrofa cristatus*.
11. Chitre, eastern Nepal, 7500 feet. A hamlet not shown on current maps but located on the main ridge twelve miles north of Dhankuta (q.v.) January 28. *Soriculus caudatus*, *Rattus niviventer niviventer*, *Mus musculus homourus*.
12. Dur, eastern Nepal, 8500 feet. A hamlet not shown on current maps but located on the main ridge eighteen miles north of Dhankuta (q.v.) January 29. *Rattus eha eha*.
13. Mangalbare, eastern Nepal, 8650-8750 feet. 27° 16' N., 87° 30' E. January 30-February 6. *Soriculus caudatus*, *Soriculus macrurus*, *Lepus grahmi*, *Petaurista magnificus*, *Rattus rattus brunneusculus*, *Rattus eha eha*, *Mus musculus homourus*, *Martes flavigula flavigula*.
14. Chainpur, eastern Nepal, 4300 feet. 27°

- 17' N., 87° 19' E. February 9. *Herpestes auropunctatus auropunctatus*.
15. Richavas, eastern Nepal, 1150 feet. Not shown on current maps. On the east bank of the Arun Kosi just south of its confluence with the Legua river. 27° 9' N., 87° 16' E. February 11, *Mus nagarum*.
16. Dhankuta, eastern Nepal, 4200 feet. 26° 59' N., 87° 21' E. February 14. *Callosciurus pygerythrus lokroides*.
17. Chatra, eastern Nepal, 500 feet. 26° 51' N., 87° 10' E. February 18-21. *Tupaia glis lepcha*, *Callosciurus pygerythrus lokroides*, *Rattus rattus brunneusculus*, *Paradoxurus hermaphroditus pallasii*.

Order INSECTIVORA

Family SORICIDAE

Soriculus caudatus (Horsfield, 1851)

Ten specimens: Chitre, 7500 feet, January 28, 1 (290036); Mangalbare, 8650-8750 feet, January 31-February 4, 9 (290037-45).

We consider *Soriculus leucops* (Horsfield, 1855) with very similar characters, to be a synonym of *S. caudatus*.

Soriculus macrurus Blanford, 1888

Two specimens: Mangalbare, 8750 feet, February 2 and 4 (290034-35).

The two species of *Soriculus* reported upon here may be separated on the basis of tail length and colour. *S. caudatus* has the tail similar to or approaching the head and body in length (an index ratio of 80-108 per cent in the specimens examined), and in its general aspect the dorsal coloration is a warm dark brown; whereas, *macrurus* has the tail considerably longer than the head and body (an index ratio of c. 140 per cent) and the dorsal coloration is a cold gray hue approaching Chaetura Drab of Ridgway (1912).

Ellerman and Morrison-Scott (1951, p. 59)

recognize the dark *caudatus* and the very similar *leucops* as separate species and unaccountably consider the very pale and distinct *macrurus* to be a synonym of *leucops*.

Suncus murinus tytleri (Blyth, 1859)

Ten specimens: Chisapani, 950 feet, (December 16-19, 3 (290047-49); Rekcha, 5000 feet, December 27-29, 6 (290050-55); Tikapur, 500 feet, January 9, 1 (290056).

The entire series of brown musk shrews from localities at different elevations in western Nepal is uniformly pale in colour, showing affinity with the pallid shrews of the drier parts of north-western India rather than with the darker coloured races towards the east. Apparently they are similar to the eight specimens from western Nepal referred to *tytleri* by Lindsay (1929, p. 332). No specimens of *tytleri* are now available to us, but the colour "light rufescent sandy-brown" originally ascribed to it by Blyth would seem to indicate a population even paler than that in western Nepal.

Suncus caeruleus (Kerr, 1792)

One specimen; Raxaul-Birganj, 350 feet, November 18 (290046).

The external and cranial dimensions of this species are less than those of adults of *Suncus caeruleus* but exceed adults of *Suncus murinus*. (*caeruleus*—one female head and body length 123; breadth of braincase 13.4, vs. *murinus*—four females average 112.5; 121 mm respectively.) Ellerman and Morrison-Scott (1951, pp. 65-66) have merged these two species but such an arrangement is untenable when specimens are compared.

Family TUPAIIDAE

Tupaia glis lepcha Thomas, 1922

Two specimens: Chatra, 500 feet, February 18 and 20 (290063-64).

This is apparently the westernmost record of the occurrence of tree shrews north of the Ganges river, and it definitely establishes the presence of the group in Nepal.

Order CHIROPTERA

Family PTEROPODIDAE

Cynopterus sphinx gangeticus Anderson, 1910³

Four specimens: Chisapani, 950 feet, December 20-21 (290057-60).

Family VESPERTILIONIDAE

Scotophilus heathii heathii (Horsfield, 1831)

Two specimens: Raxaul-Birganj, 350 feet, November 16-17 (290061-62). No. 290061 is a skin only.

Order PRIMATES

Family CERCOPITHECIDAE

Presbytis entellus schistaceus (Hodgson, 1840)

Two specimens: Chisapani, 950 feet, December 20, 1 (290065); Chatra, 500 feet, February 17, 1 (290066).

Order LAGOMORPHA

Family LEPORIDAE

Lepus ruficaudatus ruficaudatus

I. Geoffroy, 1826

One specimen: Kauriala Ghat, U.P., 400 feet, December 11 (290067, skull only).

Among the few skulls of hares from the Indian region in the National Museum of Natural History, the present one best matches specimens from Sirsa and Ladak labelled *Lepus ruficaudatus rajput*, differing from them only in having smaller auditory bullae. Contradictory opinions as to the relationship of *Lepus ruficaudatus* to the Oriental hares have been expressed by Ellerman and Morrison-Scott

³ Agarwal (1973) considers *gangeticus* to be a synonym of *C. s. sphinx*.

(1951, p. 437) and Petter (1961, pp. 36-38). These authors studied different specimens and relied on different morphological characters. The need for a comprehensive revision is evident.

Lepus grahami subsp?

One specimen: Mangalbare, 8750 feet, February 2 (290068).

A woolly-coated juvenile hare from Mangalbare is too young for positive identification. It is hoped that those who have the opportunity to make new collections in Nepal, or to study some of the old material will look for adult hares of whatever race the young Mangalbare specimen represents.

Order RODENTIA

Family SCIURIDAE

Callosciurus pygerythrus lokroides

(Hodgson, 1836)

Five specimens: Dharan Bazar, 1000 feet, January 22, 1 (290074); Dhankuta, 4200 feet, February 14, 2 (290075-76); Chatra, 500 feet, February 18-19, 2 (290077-78).

As arranged by Ellerman (1947, pp. 266-267), all the recognizable forms of this group of squirrels are currently treated as subspecies of a single species, which takes the earliest name, *pygerythrus*. Under this convenient but perhaps overly simplified classification, all the populations inhabiting the base and lower slopes of the Himalayas from northern Assam to Nepal are referred to one subspecies, *C. p. lokroides*. For present purposes, we have followed Ellerman's arrangement, but with some doubt as to its ultimate stability.

Dremomys lokriah lokriah (Hodgson, 1836)

Five specimens: Chandragiri Pass, 7500 and 7000 feet, November 22 and December 6, 4 (290069-71, 290073); Godaveri, 7000 feet, November 27, 1 (290072).

Petaurista magnificus (Hodgson, 1836)

One specimen: Mangalbare, 8750 feet, February 4 (290079).

Family CRICETIDAE

Tatera indica indica (Hardwicke, 1807)

Two specimens: Kauriala Ghat, 400 feet, U.P., December 12, 1 (290080); Tikapur, 500 feet, January 7, 1 (290081).

Family MURIDAE

Bandicota bengalensis bengalensis

(Gray, 1833)

One specimen: Katmandu, 4271 feet, December 2 (290082).

Rattus rattus gangutrianus Hinton, 1919

Eight specimens: Chisapani, 950 feet, December 16-19, 3 (290084-86); Rekcha, 5000 feet, December 17-31, 4 (290087-90).

An immature animal, sex not recorded on the specimen tag but noted in the field-notes as a male, from Tikapur, 500 feet, January 9, 1949 (290091).

All of the specimens treated in this and the following accounts are of the white-bellied type which students of Indian house rats have generally designated as "outdoor" forms. None of the dark-bellied "indoor" rats are represented. The subspecies of *Rattus rattus* are notoriously difficult to define, and it is therefore gratifying to find that the present Nepalese material divides readily into uniform western (*gangutrianus*) and eastern (*brunneusculus*) series separated by easily recognizable colour differences. The simplicity of this distributional pattern is probably in part an illusion, made possible by the smallness and wide geographic separation of the series. Both Hinton (1918-1919) and Ellerman (1947) studied much larger series and found a more complex and confused taxonomic situation.

Rattus rattus brunneusculus (Hodgson, 1845)

Nine specimens: Mangalbare, 8750 feet, January 31-February 4, 8 (290092-99); Chaitra, 500 feet, February 21, 1 (290100).

Rattus turkestanicus vicereis (Bonhote, 1903)

Two specimens: Rekcha, 5000 feet, December 28-31, 1948, 2 (290102-290103).

For use of the above name, see Schlitter and Thonglongya (1971).

Rattus nitidus nitidus (Hodgson, 1845)

One specimen: Godaveri, 6000 feet, November 28 (290083).

An adult female, with three pairs of pectoral and three pairs of inguinal mammae.

Rattus eha eha (Wroughton, 1916)

Twelve specimens: Dur, 8500 feet, January 29, 1 (290109); Mangalbare, 8750 feet, January 31-February 3, 11 (290110-20).

Rattus niviventer niviventer (Hodgson, 1836)

Five specimens: Chitre, 7500 feet, January 28 (290104-08).

Mus booduga booduga (Gray, 1837)

Four specimens: Chisapani, 950 feet, December 18, 1 (290127, skin only); Tikapur, 500 feet, January 7, 1 (290130); Biratnagar, 250 feet, January 18, 2 (290132-33, the first a skin only).

Mus nagarum (Thomas, 1921)

Four specimens: Godaveri, 6000 feet, November 28, 1 (290126); Rekcha, 5000 feet, December 28-29, 2 (290128-29); Richavas, 1150 feet, February 11, 1 (290134).

Mus dunni (Wroughton, 1912)

One specimen: Tikapur, 500 feet, January 9, 1 (290131).

Mus musculus homourus Hodgson, 1845

Two specimens: Chitre, 7500 feet, January

28, 1 (290124). Mangalbare, 8750 feet, February 6 (290125).

Mus saxicola gorkha (Thomas, 1914)

Three specimens: Chisapani, 900 feet, December 21 (290121-23).

Order CARNIVORA

Family CANIDAE

Canis aureus indicus Hodgson, 1833

Two specimens: Raxaul-Birganj, 350 feet, December 7, 1 (290135); Chisapani, 950 feet, December 18, 1 (290136).

Vulpes bengalensis (Shaw, 1800)

One specimen: Katmandu, 4500 feet, December 5 (290137, skin only).

This specimen is significant in that it provides a first definite locality record for the Bengal fox in Nepal and eliminates any doubt as to the occurrence of the species in that country. As reviewed by Pocock (1936, pp. 49-53, and 1941, pp. 129-138), the earliest records include only two specimens presumed to have been collected somewhere in Nepal. One from the collection of B. H. Hodgson became the type of *Vulpes hodgsonii* Gray; the other was collected by Colonel Cobb (or Cobbe) and, according to Pocock, it served as type for *Canis chrysurus* and *Vulpes xanthura*, both proposed by Gray.

The specimen is a female in fresh winter pelage. It matches in almost exact detail the description by Pocock (1941, p. 131). The external measurements, as recorded by the collectors are: Length of head and body 474, tail 267, hind foot 105, ear 87.

Family MUSTELIDAE

Martes flavigula flavigula (Boddaert, 1784)

Three specimens: Mangalbare, 8750 feet, January 30- February 3 (290138-40).

Lutra perspicillata perspicillata

I. Geoffroy, 1826

One specimen: Chisapani, 950 feet, December 20 (290145).

The name *perspicillata* is applied to this large otter for reasons discussed in detail by Pocock (1941, pages 292-303).

Family VIVERRIDAE

Paradoxurus hermaphroditus pallasii

Gray, 1832

One specimen: Chatra, 500 feet, February 21 (290144).

On geographic grounds, this specimen might be considered intermediate between *Paradoxurus h. pallasii*, which has its principal range to the eastward in Sikkim, Assam, and Burma, and *P. h. bondar* of Bihar and the Nepal terai to the westward. It is here assigned to the race *pallasii* because it closely resembles the description given by Pocock (1939, pp. 401-402) of other specimens in winter pelage under that name.

Herpestes auropunctatus auropunctatus

(Hodgson, 1836)

One specimen: Chainpur, 4300 feet, February 9 (290141).

Herpestes edwardsii nyula (Hodgson, 1836)

Two specimens: Tikapur, 500 feet, December 13 and January 6 (290142-43).

Variations in colour of this species have been thoroughly discussed by Pocock (1941, pp. 9-12).

Order ARTIODACTYLA

Family SUIDAE

Sus scrofa cristatus Wagner, 1839

One specimen: Dharan Bazar, 1000 feet, January 22 (290146).

REFERENCES

- AGARWAL, V. C. (1973): Second Zoological Survey of India—1967: Calcutta.
- ALI, S. & RIPLEY, S. D. (1968-1974): Handbook of the Birds of India and Pakistan together with those of Bangladesh, Nepal, Sikkim, Bhutan and Sri Lanka. 10 volumes. Oxford University Press, Bombay.
- ELLERMAN, J. R. (1947): A key to the Rodentia inhabiting India, Ceylon, and Burma, based on collections in the British Museum. *J. Mammal.* 28: 249-278, 357-387.
- ELLERMAN, J. R., & MORRISON-SCOTT, T. C. S. (1951): Checklist of Palaearctic and Indian Mammals 1758 to 1946. British Museum (Natural History), London, pp. 810, map.
- HINTON, MARTIN, A. C. (1918-1919): Scientific Research from the Mammals Survey, xviii: Report on the House Rats of India, Burma and Ceylon. *J. Bombay nat. Hist. Soc.*, 26: 59-88, 384-416, 716-725, 906-918.
- LINDSAY, HELEN M. (1929): Scientific Results from the Mammal Survey, xlvi: Indian Shrew. *ibid.* 33: 326-340.
- PETTER, F. (1961): Eléments d'une révision des Lievres européens et Asiatiques du sous-genre *Lepus*. *Zeitschrift für Säugetierkunde*. 26 (1): 30-40.
- POCOCK, R. I. (1936): The foxes of British India. *J. Bombay nat. Hist. Soc.* 39(1): 36-57.
- (1939): The Fauna of British India, including Ceylon and Burma: Mammalia, volume I: Primates and Carnivora (in part), Families Felidae and Viverridae. Taylor and Francis, London. pp. 463.
- (1941): The Fauna of British India, including Ceylon and Burma. Mammalia, Volume II. Carnivora (continued from Vol. I), suborder Aeluroidea (part) and Arctoidea. Taylor and Francis, London. pp. 503.
- RIDGWAY, R. (1912): Color Standards and Color Nomenclature. Privately printed, Washington. pp. 43, pl. 53.
- RIPLEY, S. D. (1950): Birds from Nepal, 1947-1949. *J. Bombay nat. Hist. Soc.* 49(3): 355-417.
- (1950a): New Birds from Nepal and the Indian Region. *Proc. Biol. Soc. Washington* 63: 101-108.
- (1950b): Peerless Nepal—A Naturalist's Paradise. *Nat. Geog. Mag.*, 97(1): 1-40.
- (1951): Exploration in Nepal. *The Minnesota Naturalist*, 1(4): 7.
- (1952): Search for the Spiny Babbler: and adventure in Nepal. Houghton Mifflin, Boston, pp. 301 (Republished 1953, London, Victor Gollancz Ltd.)
- (1961): A Synopsis of the Birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan and Ceylon. Bombay Natural History Society, Bombay. pp. 703. (new and revised edition in press, 1980).
- (1975): Zoological Expedition to Nepal, 1948-1949. (Paul H. Oehser, editor). *Nat. Geog. Soc. Res. Reports, 1890-1954 Projects*, pp. 271-276.
- (1978): A Naturalist's Adventure in Nepal. *Bibliotheca Himalayica*. Ratna Pustak Bhandar, Katmandu. pp. 301. (A reprint of Search for the Spiny Babbler, 1953).
- SCHLITZER, D. A. & THONGLONGYA, K. (1971): *Rattus turkestanicus* (Satunin, 1903), the valid name for *Rattus rattoides* Hodgson, 1845 (Mammalia: Rodentia). *Proc. Biol. Soc. Washington* 84(20): 171-174.